EDUCATION SCIENCE CENTRE KAMPALA

SCIENCE EDUCATION CENTRE KAMPALA

"MAKING SCIENCES PASSABLE"

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ULSCE SCIENCE BOOSTER PACKAGE 2024

CHEMISTRY PAPER 1

545/1

SET 3

2HOURS

Name:.....

Signature .....

Random number						personal number		

INSTRUCTIONS TO CANDIDATES.

- This paper consists of two sections **A** and **B**.
- Answer all the items in section A on the spaces provided.
- Section **B** has **two** parts **I** and **II**. Answer **one** item from each part.
- Answer **four** items in all.
- Any additional item(s) answered will not be scored.

FOR EXAMINER'S USE ONLY

SECTIONS	SCORE	EXAMINER
A		
B		
Total score		

SECTION A

Answer ***all*** items in from this section.

Item 1

A man from the village is not used to brushing his teeth with a tooth paste after a meal every evening and requested to be educated about the underlying facts behind this practice. He felt just washing his mouth with water was sufficient enough to stay clean.

Task

As a chemistry learner;

(a) state why it was necessary to use a toothpaste.

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(b) help the man understand how it works.

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(c) advise the man on the challenges associated with long term use of the paste.

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(d) How does the method compare with the man's way of maintaining clean and healthy teeth?

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Item 2

A rich man was in the process of connecting water to his newly constructed residential building. There are various materials he could use for constructing a water tank stand whose nature and properties determine their suitability. However he needs to be advised before buying the materials and has asked a local builder to educate him. The builder decides to come to you for advice.

Task

(a) Use your knowledge of chemistry to explain;

(i) the nature of materials.

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(ii) the suitability of materials.

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(b) Advise the rich man on the choice of materials for use and their impact on the environment.

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SECTION B

PART 1

Answer only ***one*** item from this part.

Item 3

The greatest percentage of rural communities survive on agriculture. The soils have become infertile and crop yields and harvests poor. Food security is dependent on use of artificial fertilizers which are quite expensive. The farmers are considering constructing an industrial plant to manufacture nitric acid that can be used to make a fertilizer with minimum environmental impact.

$$NH_3(g) + HNO_3(aq) \longrightarrow NH_4NO_3\ (ag)$$

However most farmers are ignorant about the entire process of production, side effects, mitigation and the social benefits for which they are seeking to be enlightened.

Task

Using your knowledge of chemistry, prepare a write up to address the farmers.

Item 4

A women's group dealing in selling matooke (bananas) and millet have registered heavy losses due to ripening of bananas and germination of millet in storage. A parent who visited the school on the science fare, remembers that a sanitizer which is now on high demand due to red eye infection can be processed from these materials. The parent has consulted the leaders of the women's group and advised them to come to your school for an educative visit.

Task

As a student of chemistry, prepare a presentation of the message the women would use to produce and market the sanitizer.

PART II

Answer only ***one*** item from this part.

Item 5

Lwera is a big wet land that has of late been heavily encroached on for sand mining by some investors. The wet land is next to lake Victoria. The investors use heavy caterpillar graders and trucks and have constructed temporary settlement, fenced off the area from local residents who felt cheated. Besides this, the activity was impacting on the environment. The parliament of Uganda debated the matter and a decision was made to revoke/stop the activity.

Task

As a student of chemistry make a write up of the presentation the residents must have forwarded to their member of parliament on the natural resource for consideration.

Item 6

In most urban centers, waste management and disposal is a big challenge that has kept the local authorities seeking for solutions. In one slum, some residents pass stool into polythene papers and dispose off in the nearby water channel. Garbage and plastic materials are scattered almost everywhere. This has prompted the local authorities to organize sensitization workshops to address the challenge.

Task

As a student of chemistry, write a presentation of the message you would expect the local authorities to use to sensitize the residents.

END